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ABSTRACT

This study is an evaluation of a summer tutorial program designed to encourage inner city secondary school students to complete high school in a manner such that their chances of entering college would be maximized. The subjects in the tutorial group were forty 16 year-old boys. The control group comprised 28 high school boys closely resembling the tutorial sample. The program emphasized reading and mathematics, with some attention given to art and physical education. School related attitudes of the two groups were measured with a semantic differential devised specifically for this study. Analysis of the data revealed that: (1) in the last three years of school, there was essentially no difference in the scholastic achievement of the two groups tested; (2) at the end of the program (senior year in high school) the tutorial group's school related attitudes were significantly more positive than those of the control group; (3) for the tutorial group, positive attitudes toward school were not significantly related to intelligence; and, (4) after high school, 82 percent of the tutorial group and 18 perecent of the control group began college. The findings are considered to suggest that attitudinal side effects of educational enrichment programs may have a discernible effect on subsequent striving. (RJ)

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REPORT No. 72

AN EVALUATION OF A HIGH SCHOOL TUTORIAL PROGRAM

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BY

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ABSTRACT

Forty 16 year-old inner-city boys participated in a summer tutorial program. While their grades did not improve relative to a control group, their attitudes toward school changed significantly in a positive direction. After high school 82% of these boys entered college, compared with 18% of the control group. It was suggested that the attitudinal side effects of educational enrichment programs may have a discernable effect on subsequent educational striving.

AN EVALUATION OF A HIGH SCHOOL TUTORIAL PROGRAM

In the summer of 1967, The Johns Hopkins University began a tutorial program designed to encourage inner-city secondary school students to complete high school in a manner such that their chances of entering college would be maximized. An evaluation of the results of the program are presented in this paper.

As noted, the program began during the summer of 1967. It continued through the following school year in an attenuated form, resumed in force in the summer of 1968, and operated in a reduced fashion to its end in June, 1969. The major impact of the program was assumed to occur during the two summer periods. Abbreviated sessions during the school year were used primarily to maintain contact with the boys.

The program consisted of a half-day of classes, five days per week, for approximately six weeks during two successive summers. Classroom emphasis was on mathematics and reading, although some attention was also given to art and physical education. The importance of school and further education was constantly stressed both in and out of class. During the school year, the project boys met every other Saturday at the University for half a day, however no formal instruction was offered at that time.

The original plan of the program contained no provision for its evaluation. Furthermore, the authors became aware of the project in

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September, 1967, at which point it was half completed. The research design contains some obvious flaws as a consequence. Despite these shortcomings in design, the findings seem sufficiently important to warrant reporting.

Method

Subjects. Subjects for the study were 68 inner-city boys who, at the start of the project, had just finished their sophomore year in high school. These boys formed two groups. The first group, designated the Tutorial Sample (N = 40), actually participated in the program; they were nominated by Baltimore City high school officials (principals, teachers, counselors, and coaches). Nominations were screened to detect boys of marginal ability who would be unable to profit from the program. Otis Gamma IQ's for the Tutorial Sample varied between 86 and 126, with a mean of 104.2 and a standard deviation of 8.50.

Members of the second group were chosen by Mr. Earl Ball, a high school English teacher who directed the Tutorial Program. Mr. Ball selected 28 boys from his high school who closely resembled the Tutorial Sample in their attitudes toward school. This second sample included varsity athletes and members of the high school student government; they served as a control group. Otis Gamma IQ's for the control group varied between 86 and 115, with a mean of 98.1 and a standard deviation of 5.93. The t-ratio for the difference in intelligence test scores for the two groups was 3.22 ($p < .01$), with the Tutorial Sample receiving higher scores. However, computation of Tilton's Overlap Coefficient

(Tilton, 1937) shows that more than 70% of the scores of the two groups overlap. Further evidence presented below suggests that the results of the program cannot be explained entirely in terms of IQ differences between these two groups.

Procedure. There is good reason to doubt that achievement test scores will change as a result of participation in enrichment programs (cf. Jensen, 1968). Nor should academic attainment as measured by grades necessarily increase. Rather, if such programs are successful, students may be prompted to take more difficult courses, leading to an actual decline in grades. Thus it was predicted that the effects of the tutorial program would be expressed primarily in terms of increased motivation within the Tutorial Sample. Moreover, such motivational changes may be necessary for any subsequent alterations in academic behavior. The investigation had two parts: first the school-related attitudes of the experimental and control groups were assessed and compared; second, an attempt was made to determine those factors which led to differential performance within the tutorial program itself.

After considerable discussion we concluded that the most important school-related attitudes could be regarded as varying along three dimensions. The first, designated liking, concerned the degree to which a boy indicated that he "liked" school. The second dimension was labelled accessibility, and reflected how accessible (to himself) school was perceived to be. The third dimension was called utility, indexed by how useful a boy felt school might be.

Figure 1

SEMANTIC DIFFERENTIAL SCALES

good	:__:__:__:__:__:__:__ (1 2 3 4 5 6 7)	bad
possible	:__:__:__:__:__:__:__ (1 2 3 4 5 6 7)	impossible
useful	:__:__:__:__:__:__:__ (1 2 3 4 5 6 7)	useless
like	:__:__:__:__:__:__:__ (1 2 3 4 5 6 7)	dislike
easy	:__:__:__:__:__:__:__ (1 2 3 4 5 6 7)	hard
helpful	:__:__:__:__:__:__:__ (1 2 3 4 5 6 7)	not helpful
fun	:__:__:__:__:__:__:__ (1 2 3 4 5 6 7)	boring
near	:__:__:__:__:__:__:__ (1 2 3 4 5 6 7)	far
important	:__:__:__:__:__:__:__ (1 2 3 4 5 6 **7**)	not important

These attitudes were measured with a semantic differential devised specifically for this study. Three sets of bipolar adjectives were used to assess each attitudinal component along a 7-point continuum. The rated concepts were: school, reading, homework, teacher, math, sports, and music. Sports and music were inserted in part to disguise the purpose of the questionnaire and in part to check the validity of the responses. The semantic differential was administered to all boys during the early fall of 1968, prior to their last year in high school. A copy of the semantic differential scales appears in Figure 1. The Tutorial Sample was also given the California Psychological Inventory (CPI; Gough, 1957). Finally, at the end of the summer of 1968, seven members of the Tutorial Project staff were asked to rate, on a scale from 0 to 10, the likelihood that each boy would continue his education after high school. The estimated reliability of these composite ratings was .92.

Results

Attitude Measurement of Group Differences. To determine whether the semantic differential worked as planned, scores for each dimension were intercorrelated across concepts, and the resulting matrix was analyzed by means of a principle components factor analysis. The first factor defined a liking dimension. The accessibility and utility dimensions, however, appeared to be specific to particular concepts rather than forming clear-cut factors orthogonal to liking.

Table 1

Correlations of School Related Attitudes
with Variables Listed

Tests and Measures	School Related Attitudes		
	Liking	Accessibility	Utility
A. California Psychological Inventory			
Dominance	.20	.28	.14
Capacity for Status	.03	.05	.09
Sociability	.18	.20	.21
Social Presence	.07	.19	.29
Self Acceptance	-.01	-.01	.00
Well Being	.32*	.25	.40**
Responsibility	.32*	.27	.27
Socialization	.07	.09	.22
Self-control	.12	.11	.08
Tolerance	.38*	.29	.29
Good Impressions	.11	.06	.04
Communality	.21	.16	.38*
Achievement via Conformance	.30*	.31*	.06
Achievement via Independence	.26	.13	.08
Intellectual Efficiency	.33*	.28	.36*
Psychological Mindedness	.28	.30*	.07
Flexibility	.07	.05	.23
Femininity	.23	.19	.49**
B. Otis Gamma IQ	.21	.12	.15
C. Composite Staff Rating	.36*	.29	.10
D. Senior Year GPA	.44**	.31*	.11

Note: --N = 40

* $p < .05$; ** $p < .01$

Table 1 presents correlations between the three dimensions of school related attitudes, the CPI, composite staff ratings for post high school education, Otis Gamma IQ scores, and senior year grades. These correlations, based on the Tutorial Sample, further elaborate the meaning of scores from the semantic differential. Perhaps the most interesting finding in Table 1 is that positive attitudes toward school are associated with good grades but not with IQ scores. Thus for this sample, there was no relationship between scholastic aptitude and liking school, although attitudes and performance were significantly associated.

An analysis of variance was performed to assess differences in the attitudes of the Tutorial Sample and the control group toward school. The results of this analysis are presented in Table 2. Four findings warrant discussion. First, the scales (B) main effect was significant ($p < .001$), suggesting that subjects were responding differently to each of the three dimensions. Second, differences between the Tutorial Sample and the control group across the concepts were significant ($p < .025$). This difference is shown graphically in Figure 2, where it is interesting to note that Tutorial Sample boys rated every school concept higher (i.e., more positively) and the two nonacademic concepts lower, than did the control subjects. Third, as indicated in Figure 3, both groups regarded school as having considerable utility. Neither group particularly liked school however, and school was perceived as considerably less accessible than useful. Finally, Figure 4 presents the scales by groups interaction, which clarifies

Table 2

Semantic Differential Analysis of Variance

Source	df	MS	F
Concepts (A)	6	571.04	23.04***
Scales (B)	2	2237.05	199.20***
Between Groups (C)	1	386.82	5.67*
A x B	12	176.19	31.45***
A x C	6	102.80	4.15***
B x C	2	75.65	6.74**
A x B x C	12	7.27	1.30
Total	1448	21.96	

Note: Concepts (A): school, reading, homework, teacher, math, sports, music. Scales (B): liking, accessibility, utility. Groups (C): tutorial sample vs. control sample.

*** $p < .001$; ** $p < .005$; * $p < .025$

Figure 2

SEMANTIC DIFFERENTIAL ANALYSIS: GROUP BY CONCEPT INTERACTION

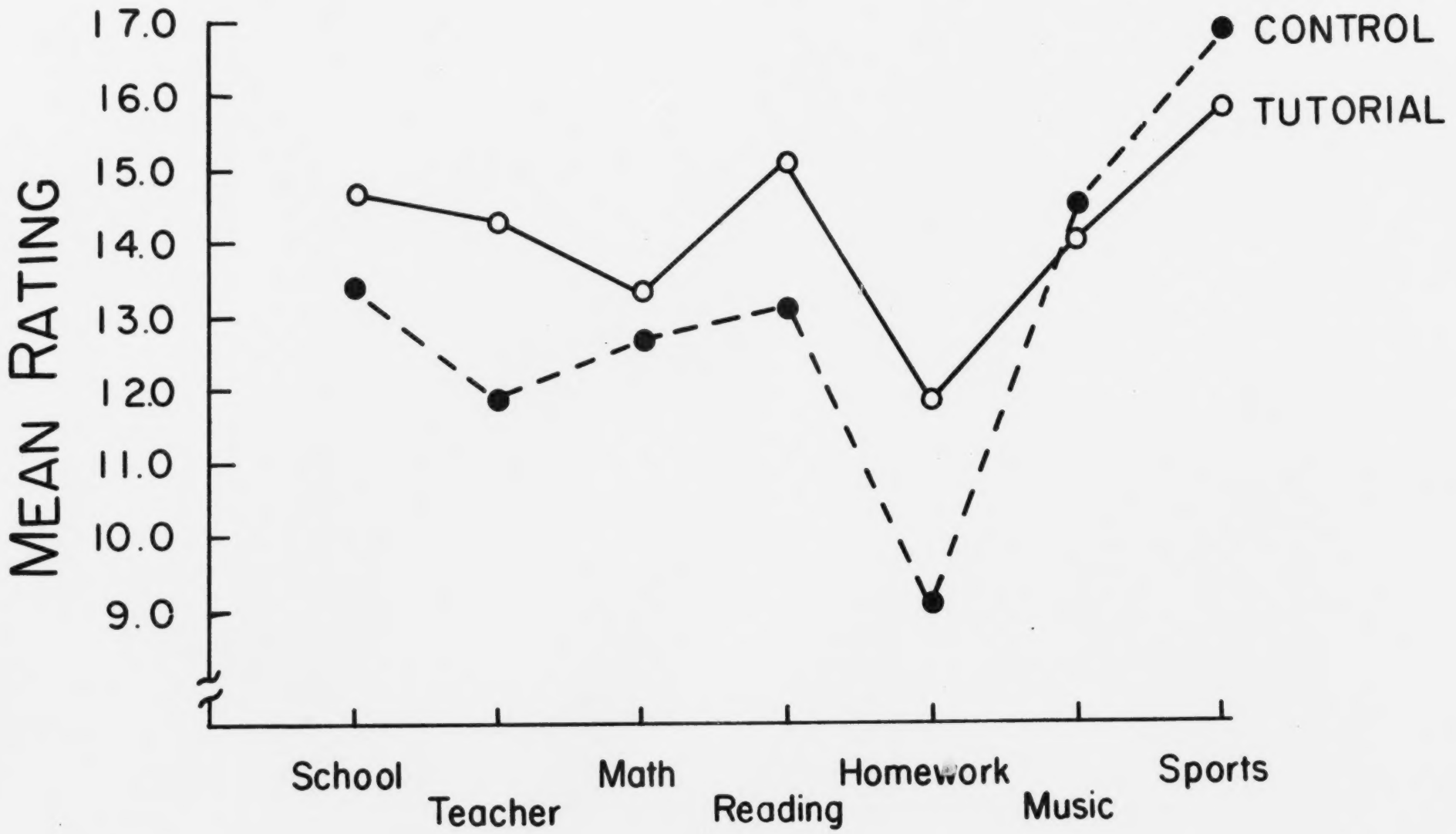


Figure 3

SEMANTIC DIFFERENTIAL ANALYSIS: CONCEPT BY SCALE INTERACTION

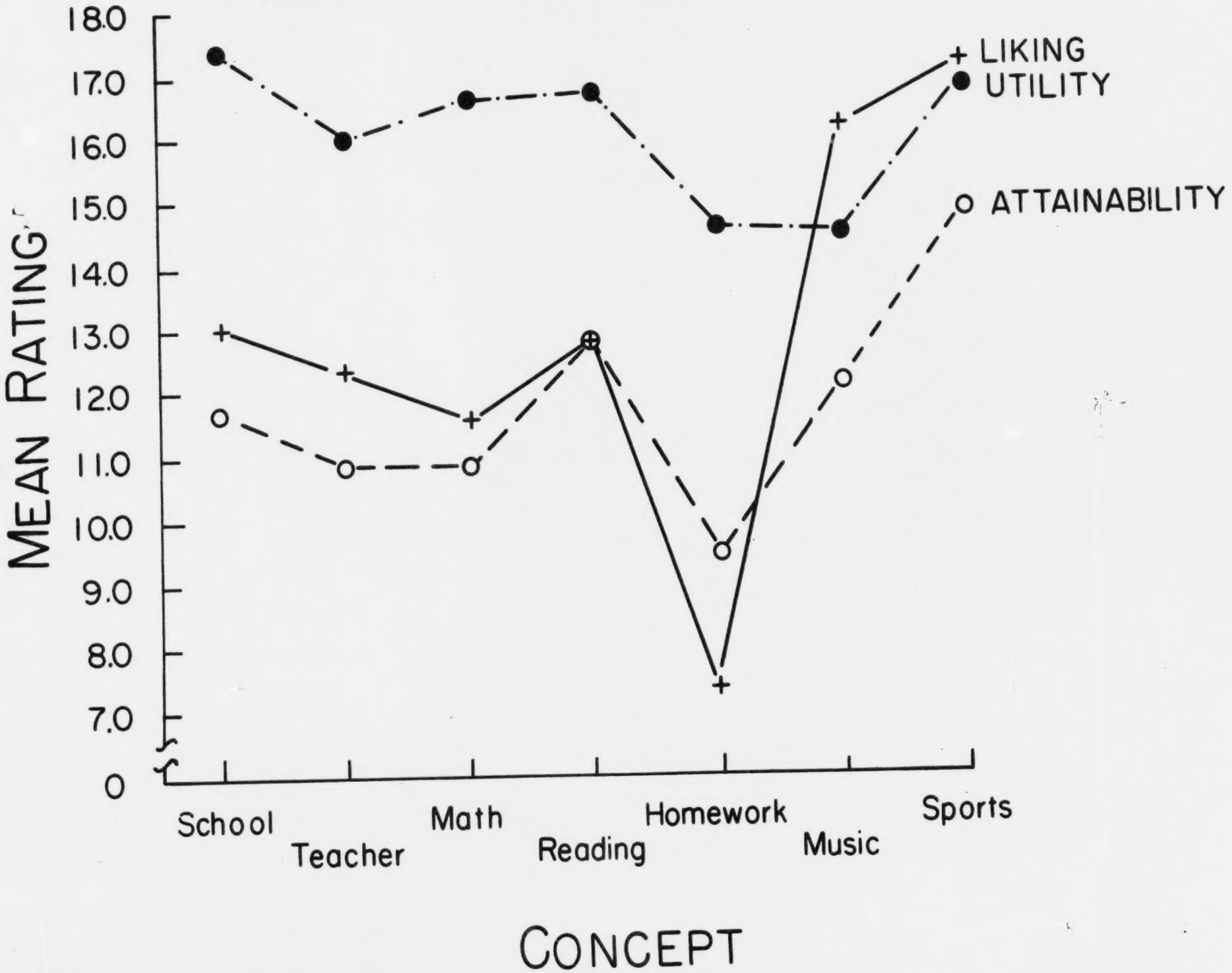
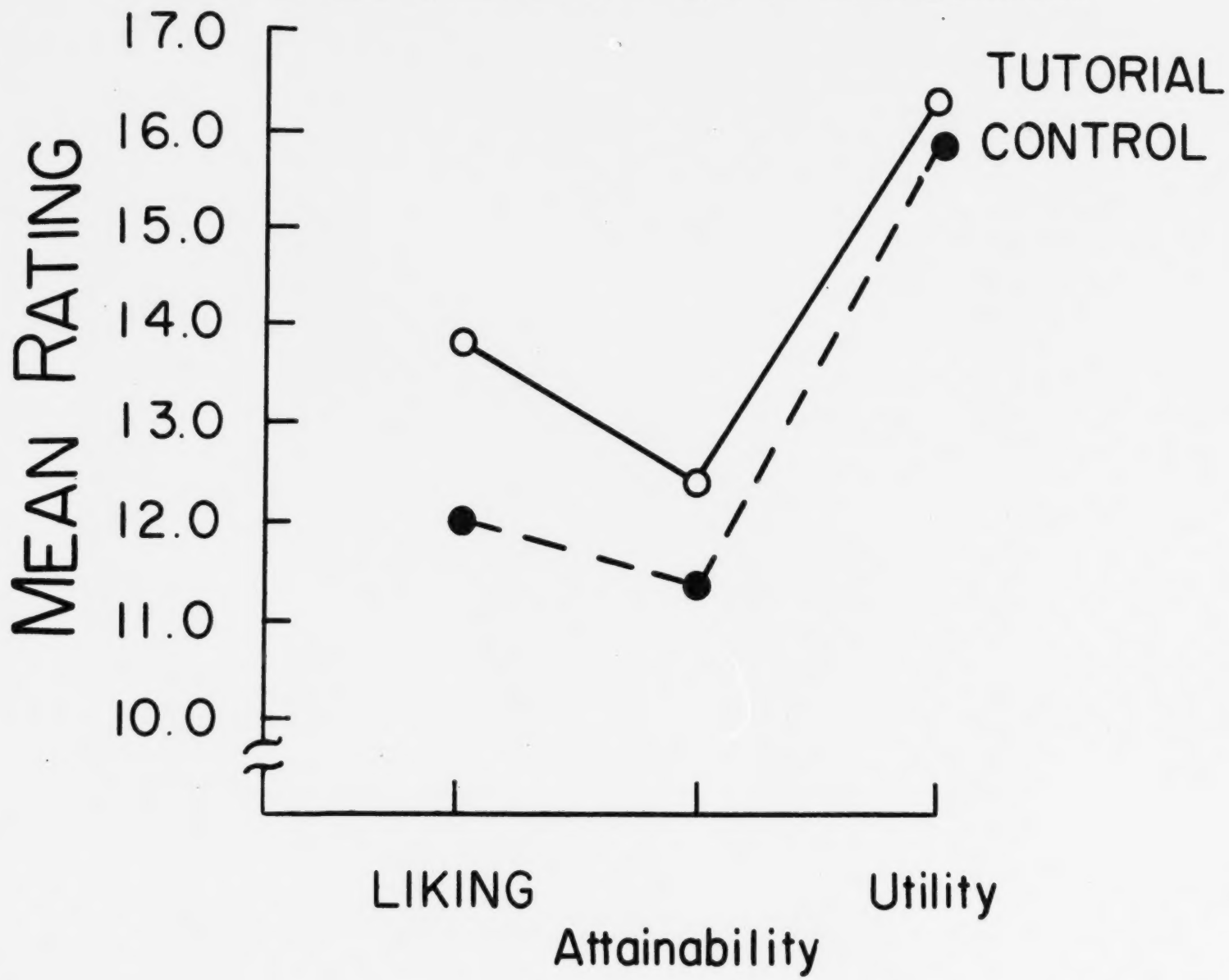


Figure 4

SEMANTIC DIFFERENTIAL ANALYSIS: GROUP BY SCALES INTERACTION



the differences between the Tutorial Sample and the control group. Both groups regarded school as more useful than pleasant, and more pleasant than accessible; however, the Tutorial Sample gave school a significantly more positive evaluation than did the control group. Thus it appears that liking is the attitude component most altered by the Tutorial Program. Although relative to sports and music, the Tutorial Sample continued to find school disagreeable.

One might argue that the Tutorial Sample evaluated school more favorably because it was more intelligent, and therefore found school more rewarding. The lack of significant correlations between intelligence test and attitude scores (see Table 1) suggests that the differences in attitudes between the two groups were not due simply to differences in ability. Rather the more positive attitudes of the Tutorial Sample may be in part attributes to the effects of the Tutorial Program itself.

While the two groups differed in terms of their attitudes toward school, it is also necessary to examine their relative academic performances during the period covered by this study. The average marks for the Tutorial Sample during grades 10, 11, and 12 were 74.7, 72.7, and 73.7 respectively. Comparable values for the control group were 69.5, 71.4, and 70.1 The Tutorial Sample received slightly but significantly better marks during 10th grade, immediately prior to the program. However, there were no significant differences in academic performance for the two groups during grades 11 and 12. Perhaps most interesting is the fact that grades for the Tutorial Sample did not

improve during high school. Thus although they may have developed more favorable attitudes toward school, their scholastic performance was apparently unaffected as a result.

This analysis was based on data gathered in September and October of 1968. Contact with the two groups was maintained through the fall of 1969. By then the Tutorial Sample had completed two summer programs at Johns Hopkins, while the control group had undergone whatever experiences characterize summers for inner-city boys. In the fall of 1969, thirty-three of the 40 boys (82.5%) in the Tutorial Program entered college, compared with five of the 28 control group boys (17.8%). Thus it is safe to conclude that the Tutorial Project had some effect on the academic careers of its participants. It also seems that this effect may be to some degree ascribed to changes in school-related attitudes.

Individual Differences. We turn now to an examination of factors which differentially affected performance in the Tutorial Program. It will be recalled that this sample was given the California Psychological Inventory. CPI scores, composite staff ratings, Otis Gamma IQ scores, attitude scores from the semantic differential, and senior year grades were used to predict graduation from high school (two boys failed to graduate) and college attendance. Table 3 presents means and standard deviations for the predictor variables and biserial correlations with the criteria of high school graduation and college attendance. The predicted events occurred nine to twelve months after the measures were obtained.

Table 3

Correlations between High School Graduation, College Attendance, and Variables Listed

Tests and Measures	Mean	Standard Deviation	High School Graduation	College Attendance
A. California Psychological Inventory				
Dominance	26.1	7.1	.05	.20
Capacity for Status	15.9	3.4	-.04	.22
Sociability	23.3	5.3	.05	.23
Social Presence	32.0	4.5	.00	.16
Self Acceptance	20.7	3.5	-.15	-.08
Well Being	29.4	5.9	-.02	.00
Responsibility	26.9	4.9	.04	.00
Socialization	33.0	5.5	-.09	.04
Self-control	23.6	7.0	.14	-.06
Tolerance	15.7	4.7	.03	.01
Good Impressions	14.2	5.7	.23	.07
Communality	24.1	3.5	.04	-.08
Achievement via Conformance	22.7	5.0	-.08	.06
Achievement via Independence	15.7	3.7	-.15	.04
Intellectual Efficiency	33.0	5.8	-.30*	-.07
Psychological Mindedness	9.7	2.5	.02	.17
Flexibility	9.4	3.9	.05	-.05
Femininity	17.6	4.3	-.18	-.16
B. Semantic Differential				
Liking	2.9	1.4	-.04	.19
Accessibility	2.5	1.4	-.12	.09
Utility	4.8	1.0	-.02	.07
C. Staff Rating	6.7	1.6	.38*	.39**
D. Otis Gamma IQ	104.2	8.5	.07	-.01
E. Senior Year GPA	73.7	8.1	.28	.29

Note: N = 40
* $p < .05$; ** $p < .01$

There are three items of note in Table 3. First, results obtained from the psychometric measures are somewhat disappointing. The CPI, Otis Gamma, and semantic differential yielded only one significant correlation with the criteria. Second, the best single predictor was the composite staff rating for post-high school education. Such a finding contributes little to an understanding of the processes underlying differential performance in this program. Moreover the measure is essentially unrepeatable. Nonetheless, it represents an interesting example of the practical validity of ratings drawn from observers with experience in a particular field.

The third finding of note is that, in absolute value terms, the attitudinal dimension of liking performed about as well as the best psychometric devices in terms of predicting college attendance. This suggests that the semantic differential attitude measure may have some practical utility for educational research. Moreover, the fact that the three attitude dimensions are differentially related to the criteria further suggests that school related attitudes should be considered in a multi-dimensional fashion.

Stepwise regression analyses were conducted using the data in Table 3 to determine the pattern of variables most predictive of the two criterion variables. The six-variable regression equation for high school graduation had a multiple correlation of .71 ($p < .01$). The equation included, from the CPI, Good Impressions with a positive weight, Self Acceptance, Intellectual Efficiency, and Femininity with negative weights. The final two variables were Accessibility from the semantic differential and the composite staff rating, both with positive weights.

The second equation, developed for the criterion of college attendance, yielded a multiple r of .59 ($p < .05$). In addition to the composite staff rating with a positive weight, the equation contained Sociability and Responsibility from the CPI, also with positive weights, Dominance, Communality, and Self-control with negative weights. The analysis suggests that boys who profited most from the Tutorial Program were friendly and outgoing (Sociability), somewhat unconventional (Communality), low-keyed (Dominance), flexible (Self-control), and responsible (Responsibility).

Because the control group was tested anonymously, no comparison between their attitudes and post high school education were possible.

Discussion

These findings form a relatively coherent pattern which may not necessarily be obvious to the reader. The research may perhaps be best discussed by first recapitulating the findings. Analyses of data for two groups of sixteen-year-old inner-city boys (the Tutorial Sample and 28 boys identified as a control group) led to four major findings:

1. During the last three years of high school, there was essentially no difference in the scholastic achievement of the two groups. Moreover, high school grades for the Tutorial Sample did not improve during or after their participation in the program.

2. At the end of the program (the beginning of the senior year of high school for both groups), the Tutorial Sample's school-related attitudes were significantly more positive than those of the control group. Conversely the two groups were not significantly different in their attitudes toward sports and music.

3. For the Tutorial Sample, positive attitudes toward school were not significantly related to intelligence.

4. After completing high school, 82% of the Tutorial Sample and 18% of the control group began college.

The importance of these findings depends in part on the similarity of the Tutorial Sample and the control group in June, 1967, measured in terms of their school-related attitudes. Lack of quantitative information on this point requires that our results be considered in a somewhat tentative fashion, subject to future revisions. Nonetheless, the findings are potentially important for two reasons. First, reports on Project Head Start (U.S. Commission on Civil Rights, 1967) indicate that, while compensatory early education may not produce stable gains in intelligence test scores, such programs do favorably influence "children's self confidence, motivation, and attitudes toward school" (Jensen, 1968, p. 3). The importance of these changes however, has not been fully explored. Data from the Hopkins Tutorial Project suggest that changes in attitudes toward school may, in fact, alter educational outcomes.

Second, although attempts to boost IQ and academic achievement have not been greatly successful, the fact that school and job performance are not strongly related (cf. Ghiselli, 1955) somewhat attenuates the importance of this finding. Grades in medical school, for example, do not predict performance as a doctor (Gough, et al, 1963; Price, et al, 1963). On the other hand, there is a strong relationship

between level of education completed and occupational status (Duncan, 1968), due in part to the educational credentials required for different careers. The present study suggests that motivational variables are amenable to change, and the resulting change may affect the level of schooling attempted. Consequently, the possibility that the attitudinal side effects of educational enrichment programs may influence educational striving becomes exceedingly important. While the findings reported here certainly require replication, the results seem interesting and the analytical model may provide a promising direction for future research.

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